Intervals, Transformations, and Slope Solution (version 53)

1. The function f is graphed below.
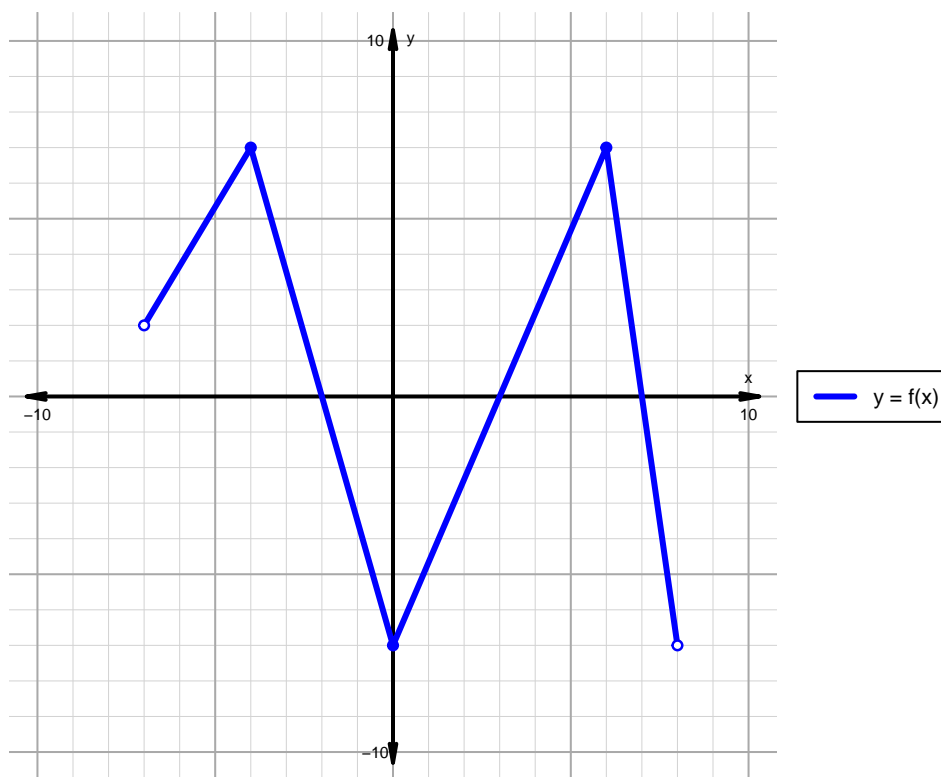
Indicate the following intervals using interval notation. Remember, you can use $\cup$ between two intervals to indicate the union. Except for range, all intervals will indicate x values; this is standard.

Feature	Where
Positive	$(-7, -2) \cup (3, 7)$
Negative	$(-2, 3) \cup (7, 8)$
Increasing	$(-7, -4) \cup (0, 6)$
Decreasing	$(-4, 0) \cup (6, 8)$
Domain	$(-7, 8)$
Range	$(-7, 7)$

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2. In the four graphs below, $y = f(x)$ is graphed as a dotted line. With a solid line, please graph the transformations indicated by the equations below.

$y = f(x + 2)$

$y = f(2 \cdot x)$

$y = f(x) - 2$

$y = 2 \cdot f(x)$
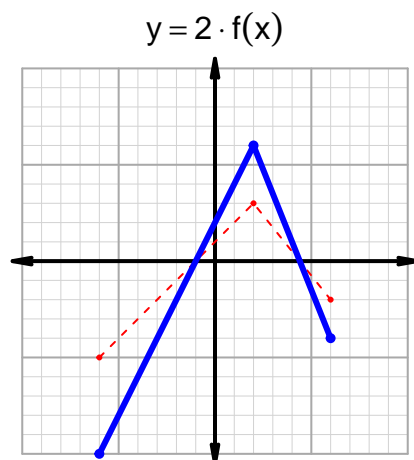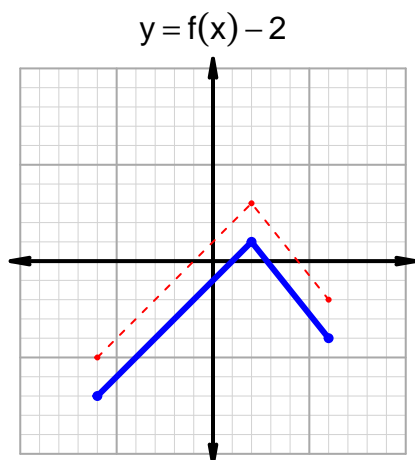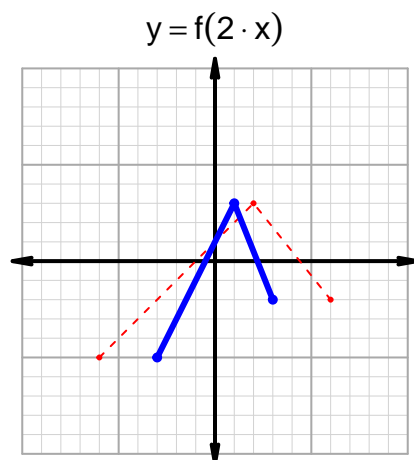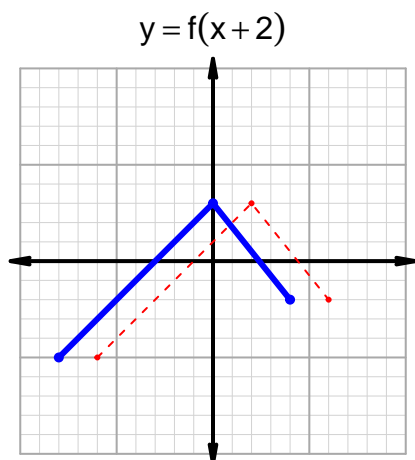
3. Let function g be defined by the table below. Use the formula $\frac{g(x_2) - g(x_1)}{x_2 - x_1}$ to find the average rate of change between $x_1 = 61$ and $x_2 = 93$. Express your answer as a reduced fraction.

x	$g(x)$
45	61
57	93
61	57
93	45

$\frac{g(93) - g(61)}{93 - 61} = \frac{45 - 57}{93 - 61} = \frac{-12}{32}$

The greatest common factor of -12 and 32 is 4. Divide numerator and denominator by the greatest common factor.

$$\text{AROC} = \frac{-3}{8}$$